



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of Kazumasa Ueda, et al

Serial No.: 09/756,140

Group Art Unit: 1755

Filed: January 9, 2001

Examiner: Michael A. Marcheschi

For: ABRASIVE FOR METAL

DECLARATION UNDER 37 C.F.R §1.132

Honorable Commissioner of Patents and Trademarks

Washington, D.C. 20231

Sir:

I, Yasuo Matsumi, a Japanese citizen residing at 20-13-10-206, Amakubo, Tsukuba-shi, Ibaraki, Japan, declare:

That I graduated from Osaka University, Department of Engineering, Graduate School of Osaka University, Department of Engineering molecular chemistry, master degree, in March 2000 and entered Sumitomo Chemical Company Limited in April 2000, in which company I have since then been engaged in research for IT related materials;

That I am familiar with the prosecution history of the identified application;

That the following experiment was conducted by me or under my direction.

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### Object of the Experiment

An object of the present experiment is to show the effect of using a polymer particle having a functional group capable of trapping a metal ion, wherein the functional group capable of trapping a metal ion is iminodiacetic acid.

### Experimental 1.

A chelate resin having an amino group as a functional group capable of trapping a metal ion (trade name: DUOLITE A568K, manufactured by Rohm & Haas Company) was subjected to wet-dispersing using a ball mill. Hydrogen peroxide as an oxidizing agent was added to the obtained slurry. The mixture was adjusted to an abrasive concentration of 2.5% by weight and a hydrogen peroxide concentration of 1.5% by weight and then pH was adjusted to 3 with nitric acid to give a polishing composition.

Using the above polishing composition, a wafer having a copper film was polished in the same manner as described Example 1 described in the specification of the identified application.

The polishing rate was 1212 Å/min.

Table

	Functional group	Polishing rate (Å/min)
Experimental 1	Amino group	1212
Example 1 described the specification of the identified application	Aminocarboxyl group (pH 3)	1620
Example 2 described the specification of the identified application	Iminodiacetic acid (pH 3)	4956
Example 3 described the specification of the identified application	Carboxyl group	2818

Conclusion.

From the results shown above, it is apparent that an abrasive comprising a polymer particle having a functional group capable of trapping a metal ion that is within the scope of the present invention showed high polishing rate.

I declare further that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the above identified application or patent issued thereon.

Date: February 17, 2004

Yasuo Matsumi  
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